

WHAT IS CLAIMED IS:

1. A round recliner mounted in a seat of a vehicle for controlling an angle of inclination of the back of the seat,
5 the recliner comprising:

a sector gear including a circular shaft hole formed so that a rotating shaft is inserted therethrough, a circular inner gear part engaged with outer gear parts of lock gears, a back connection part having a plurality of connection
10 protrusions for connecting the back connection part to the back of the seat, the connection protrusions being spaced a uniform angular distance from each other and also spaced a uniform radial distance from the circular shaft hole, and a lock gear receiving part formed at the inner surface of the
15 sector gear for receiving three lock gears and an actuating cam;

a holder combined with the sector gear, the holder including a cam receiving part for receiving connection protrusions of the actuating cam, three lock gear supporting
20 members for supporting the three lock gears, respectively, so that the lock gears are locked or released, a seat connection part having first three connection protrusions and second three connection protrusions for connecting the seat connection part to the seat, each of the first connection
25 protrusions having a diameter different from each of the

second connection protrusions, the first connection protrusions being spaced a uniform angular distance from each other and also spaced a uniform radial distance from the center of the seat connection part, the second connection protrusions being spaced a uniform angular distance from each other and also spaced a uniform radial distance from the center of the seat connection part, the first and second connection protrusions being alternately arranged, and a lock gear receiving part formed at the inner surface of the holder for receiving the lock gears;

the actuating cam disposed between the sector gear and the cam receiving part of the holder for locking the lock gears in the sector gear or releasing the lock gears from the sector gear by rotation of the rotating shaft;

the three lock gears engaged with the inner gear part of the sector gear so that the lock gears are locked or released;

a return spring for maintaining the locked state of the actuating cam, i.e., the engagement of the lock gears with the sector gear; and

a fixing holder for preventing separation of the assembled sector gear and holder from each other.

2. The recliner as set forth in claim 1, wherein the cam receiving part of the holder is provided at the center thereof

with a shaft hole, the rotating shaft being inserted through the shaft hole, and the cam receiving part of the holder is provided at the circumference thereof with a spring fixing groove for fixing an outer end of the return spring.

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3. The recliner as set forth in claim 1, wherein each of the lock gear supporting members includes:

first and second sliding supporting surfaces for supporting each of the lock gears so that each of the lock gears is slidably moved on the first and second sliding supporting surfaces;

a first blocking supporting surface for supporting each of the lock gears when the lock gears are locked; and

a second blocking supporting surface for supporting each of the lock gears when the lock gears are released, and

wherein the first and second sliding surfaces and the first blocking supporting surface are formed in the shape of circular arcs each having a rotating point as its center.

4. The recliner as set forth in claim 3, wherein a line extended from the center, i.e., the rotating point, of the first sliding supporting surface of each of the lock gear supporting members to the middle of the outer gear part of each of the lock gears is perpendicular to another line extended from a rotating point of each of the lock gears to

the middle of the outer gear part of each of the lock gears.

5. The recliner as set forth in claim 1, wherein the actuating cam includes:

5 a rotating shaft insertion hole formed so that a polygonal end of the rotating shaft is inserted therethrough, and so that the actuating cam is rotated together with the rotating shaft;

10 the connection protrusions inserted in the cam receiving part of the cam;

 a spring fixing groove for fixing an inner end of the return spring;

15 lock gear actuating protrudes for actuating locking protrudes and releasing protrudes of the lock gears, respectively, so that the lock gears are locked in the sector gear or released from the sector gear; and

 lock gear fixing protrudes for pressing against the locking protrudes of the lock gears, respectively, so that the lock gears are completely fixed to the sector gear.

20 6. The recliner as set forth in claim 5, wherein the lock gear actuating protrudes and the lock gear fixing protrudes are formed in the shape of steps, respectively, so that the lock gear actuating protrudes and the lock gear fixing
25 protrudes make contact with the lock gears and are separated

from the lock gears by means of two step-like point contacts in a step fashion when the lock gears are locked or released.

5 7. The recliner as set forth in claim 1, wherein each of the lock gears includes: the outer gear part having the same gear size as the inner gear part of the sector gear; the releasing protrude; and the locking protrude.